Chapter 7
Aviation Weapon Systems
Section I
Introduction

7-1. Standards, strategies, and requirements

a. This chapter provides weapons standards, training strategies and resource requirements for units equipped with the AH-64, AH-1, UH-1, UH-60, CH-47 and OH-58D (I). The training programs provided have been designed for each weapon system and Training Readiness Condition (TRCs A and C). Each program contains a standard and strategy which outlines the training sequence and includes suggested frequencies of live fire and device usage.

b. The objective is to assist field commanders in attaining and sustaining their standards by TRC.

c. The training strategies in this chapter are based on exercises in current TCs, FMs, MTPs and ARTEPs. FM 1-140, Helicopter Gunnery, contains the requirements for gunnery qualification. The specifics of each exercise are not presented in this pamphlet.

7-2. Training devices

a. General. Aviation relies on simulators and other training devices to train and sustain critical individual and collective tasks. Actual equipment and training ammunition is used to assess combat readiness at the individual, crew and collective level. The training strategy combines service (CALFEX) and training ammunition (Gunnery Tables) with devices and simulators to provide the comprehensive helicopter gunnery training program.

b. Objective. Training devices aid assessment and enhance and sustain skills while training in garrison or local training areas.

c. Device list. The following devices are an integral part of the training strategies. Full caliber ammunition allocations are based on their use as presented in the strategies.

(1) AH-1 Flight Weapons Simulator (FWS).

(a) The AH-1 FWS provides training capability for flight and weapons delivery, normal and emergency procedures and operational tasks required in the aircraft. The device consists of two crew stations mounted on separate motion platforms. An instructor station is available in either crew station.

(b) The original visual system using a high resolution laser scan and model board system has been upgraded. The upgraded digital imagery generation system (DIGS) utilizes computer imagery throughout the system for both "out the window" and thru-sight visuals. The pilot and copilot/gunner have the capability to train individually or as an integrated crew. The AH-1 FWS will support weapon system training for all weapons on the AH-1E and AH-1F.

(2) AH-64 Combat Mission Simulator (CMS).

(a) The AH-64 CMS provides a training capability for flight and weapons delivery, normal and emergency procedures and sensor system operating tasks required in the operational design of the AH-64 helicopter. The device consists of two crew stations mounted on separate motion platforms. An instructor station is available in either crew station.

(b) The pilot and copilot/gunner have the capability to train individually or as a crew performing an integrated combat mission using all weapon systems. The AH-64 CMS will support

weapon system training for all weapons on the AH-64A.

(3) AH-64 Cockpit, Weapons and Emergency Procedures Trainer (CWEPT). The CWEPT provides training for AH-64 pilots and copilot/gunners. The device is a non-motion simulator used for normal procedural training and simulated emergency conditions. The CWEPT simulates all sighting systems present on the AH-64 aircraft. Weapon systems engagement training can be simulated for the Hellfire missile, 2.75 inch aerial rocket system and the 30mm cannon. Currently the CWEPT is used to train individuals who are undergoing AH-64 transition qualification. The Apache Crew Trainer (ACT) is an upgraded version of the CWEPT. It is a non-motion simulator with improvement to the visual data base. It is the next generation of procedural trainer for flight and weapons system employment.

(4) Aerial Weapons Scoring System (AWSS). The AWSS is an integrated system of computer-controlled sensors used to score live fire helicopter gunnery exercises. This objective scoring system allows the commander to validate training standards, ensure training effectiveness, and substantiate training ammunition resourcing levels. The system uses acoustical sensors to score 2.75" rocket impacts and a doppler radar system to score cannon and machine-gun fire. A computer subsystem processes sensor data and provides scoring reports. An engineering change proposal (ECP) will provide objective scoring of Hellfire missile engagements using the Hellfire training missile, the aircraft laser and standard range targets.

(5) (MILES/AGES). The MILES/AGES is a force-on-force training device that allows simulated air-to-ground and air-to-air engagements from actual aircraft. It uses eye-safe lasers and computers to assess proficiency during force-on-force training exercises. MILES provides immediate casualty assessment. MILES simulates actual aircraft systems. MILES allows units to conduct operations as they would in combat and provides an objective after-action review capability.

(6) Hellfire Dummy Missile. The Hellfire Dummy Missile assists individual and crew sustainment flight and gunnery training by providing realistic a method to practice rearming and flight operations with the aircraft at combat weights.

(7) Hellfire Training Missile (HTM). The HTM allows crews to train Hellfire engagement procedures without the expenditure of a live Hellfire missile. The HTM allows the crew to search, acquire and simulate missile firing modes. The HTM provides the flight crew most of the pertinent tactical missile functions as an actual missile. The HTM may be used with or without an actual laser.

(8) Captive Flight Trainer (CFT). The CFT allows flight crews to practice air-to-air Stinger missile engagement by providing all pre-launch indications of an actual missile. The CFT is a live missile without the launch motor, flight motor and warhead. By using actual missile components, the system gives realistic cockpit indications (aural and visual) of seeker head spin up/cool down, acquisition and tracking reticles and missile lock on target.

(9) Field Handling Trainer (FHT). The FHT replicates the weight and physical appearance of an actual air-to-air Stinger missile. The FHT allows an aircrew to experience flight conditions similar to those encountered while flying with actual air-to-air Stinger missiles. It also allows armament personnel to practice loading and downloading procedures. The FHT does not provide any electronic or cockpit displays.

(10) TADS Selected Task Trainer (TSTT). The TSTT is a fully functional mock-up of the front crew station of the AH-64A Apache. It is a non-motion procedural trainer that provides all copilot/gunner (CPG) switchology and procedural step training for weapons system employment.

Section II
Training Programs

7-3. Development

a. Training programs have been developed for each TRC level and are indexed for cross reference at Table 7-1. The standard is stated at the beginning of each program and is accompanied by a training strategy (table) that identifies training events and ammunition requirements. Individual training requirements are given first, followed by crew, team, and unit. Proficiency is achieved through the use of devices, dry-fire and live-fire exercises.

b. To achieve crew level qualification as required by the STRAC standard, the crew qualification table (Table VII - Validation or Table VIII) will be live fired and objectively scored. The AWSS, or comparable DA-approved scoring system, will be requested and used to score crew qualifications. In the event that high-explosive service ammunition is issued in lieu of training ammunition (for example -- ammunition shortages, lot suspensions, etc.), the AWSS scoring system cannot be used. When using service ammunition, units should subjectively score the range.

c. The programs were developed on the assumption that training events will be evenly spaced throughout the training year. Resource availability (such as ranges) may allow a commander more live fire opportunities of shorter duration. In this case, not all crews or teams in the battalion would train at each opportunity.

7-4. Purpose and objectives of the training programs

Training programs provide a method to attain and sustain weapons proficiency throughout the training year. They ensure that all crews, platoons and companies in a battalion are adequately trained and able to sustain weapons proficiency.

7-5. Programs for the AH-64A

a. TRC A.

(1) Standard. Eighty-five percent of a company's assigned aircrews must be crew qualified and must have completed Team/Platoon or Company/Troop tables within the past 12 months.

(2) Training Strategy. The crew training strategy and ammunition requirements are given in table 7-2.

b. TRC C.

(1) Standard. Eighty-five percent of the assigned aircrews must have completed crew qualification within the past training year.

(2) Training Strategy. The crew training strategy and ammunition requirements are given in table 7-3.

7-6. Programs for the AH-1E and AH-1F

a. TRC A (AH-1E and AH-1F).

(1) Standard. Eighty-five percent of a company's assigned aircrews must be crew qualified and must have completed Team/Platoon or Company/Troop tables within the past 12 months.

(2) Training Strategy. The crew training strategy and ammunition requirements are given in tables 7-4 for the AH-1E and AH-1F.

b. TRC C (AH-1E and AH-1F).

(1) Standard. Eighty-five percent of the assigned aircrews must have completed crew qualification within the past 12 months.

(2) Training Strategy. The crew training strategy and ammunition requirements for the AH-1E and AH-1F are given in table 7-5.

7-7. Programs for door gunnery (UH-1H, UH-60, and CH-47)

a. TRC A.

(1) Standard. Ninety percent of the assigned M60D gunners must have completed qualification IAW TC 1-140 and Table X within the past 12 months.

(2) Training Strategy. The crew training strategies and ammunition requirements are given in table 7-6.

b. TRC C.

(1) Standard. Ninety percent of the assigned M60D gunners must have completed qualification IAW TC 1-140 within the past 12 months.

(2) Training Strategy. The training strategy and ammunition requirements are given in table 7-6.

7-8. Programs for the OH-58D (I)

a. TRC A.

(1) Standard. Eighty-five percent of a company's assigned aircrews must be crew qualified and must have completed Team/Platoon or Company/Troop tables within the past 12 months.

(2) Training Strategy. The crew training strategy and ammunition requirements are given in table 7-7.

b. TRC C.

(1) Standard. Eighty-five percent of the assigned aircrews must have

completed crew qualification within the past 12 months.

(2) Training Strategy. The crew training strategy and ammunition requirements are given in table 7-8.

Table 7-1
Aviation Weapon Systems Training Index

Weapon System	Paragraph	Table
Branch Specific Weapon Systems		
AH-64	7-5	7-2, 7-3
AH-1E/AH-1F	7-6	7-4, 7-5
UH-1 (Door Gunnery)	7-7	7-6
UH-60 (Door Gunnery)	7-7	7-6
CH-47 (Door Gunnery)	7-7	7-6
OH-58D (Armed)	7-8	7-7, 7-8
Other Weapon Systems		
AT-4	5-6	5-24
Rifle (M-16A1/A2)	5-9	5-39
Grenade Launcher (M203)	5-9	5-44
Machine Gun (M60/240B)	5-8	5-30
Machine Gun (M2HB)	5-8	5-33
Pistol	5-9	5-45
Hand Grenades (M228/M67)	5-9	5-48
Claymore Mine (M18A1)	5-9	5-50
Volcano	6-24	

Table 7-2
Annual Training Strategy and Ammunition, AH-64 Units (TRC A)

EVENT	TABLE	FREQ	HOW/ LEVEL	2.75/ M274	2.75/ M267	HELLFIRE	30MM	HOFFMAN	ATWESS [5]
DODIC				H972	H463	PA79	B120	L602	L367
Cdr's[6]	III-IV	1	CMS/Ind						
CMS		12							
TSTT		4							
HGST[2]	V	1	FM 1-140						
Cal/ Ver.	VI	1	Live/Sys	12			150		
Crew	VII	1	Live/Crew	32	8		200	25	
Crew	VIII	1	Live/Crew	32	8		200	25	
Team[3,4]	X	1	Live/PLT - Team	8		1[1]	180	10	
Co.[3,4]	XII	1	Live/Co. - Troop	8	6		150	15	
FTX		3							27
Total, Airframe				92	22		880	75	81
BN X 24 Aircraft				2208	528		21,120	1,800	1,944

Notes:
1. When available, stockpile reliability, surveillance/stock rotation round will be used, as rounds will not be resourced.
2. Prior to live fire.
3. One engagement will be conducted under MOPP-4 conditions IAW ATM standards.
4. Unit commanders will determine ammunition distribution for advanced table events based on unit training needs.
5. ATWESS are resourced in support of MILES/AGES training.
6. (Interim) AH64D will live fire helicopter gunnery Table III and IV pending fielding of a compatible CMS. AH64D units will be resourced an additional 44 rockets (DODIC H975) and 300 rds of 30MM TP-T (DODIC B118) per airframe, annually, until fielding of the simulator.

Table 7-3
Annual Training Strategy and Ammunition, AH-64 Units (TRC C)

EVENT	TABLE	FREQ	HOW/ LEVEL	2.75/ M274	2.75/ M267	HELLFIRE	30MM	HOFFMAN	ATWESS[3]
DODIC				H972	H463	PA79	B120	L602	L367
Cdr's	III-IV	1	CMS/Ind						
CMS		4							
TSTT		4							
HGST[2]	V	1	FM 1-140						
Cal/ Ver.	VI	1	Live/Sys	12			150		
Crew	VII	1	Live/Crew	32	8		200	25	
Crew	VIII	1	Live/Crew	32	8	1[1]	200	25	
FTX		3							27
Total, Airframe				76	16		550	50	81
BN X 24 Aircraft				1824	384		13,200	1,200	1,944

Notes:
1. When available, stockpile reliability, surveillance/stock rotation round will be used, as rounds will not be resourced.
2. Prior to live fire.
3. ATWESS are resourced in support of MILES/AGES training.

Table 7-4
Annual Training Strategy and Ammunition, AH-1 Units (TRC A)

EVENT	TABLE	FREQ	HOW/ LEVEL	2.75/ M274	2.75/ M267	TOW	20MM	HOFFMAN	ATWESS[1]
DODIC				H972	H463	PV04	A896	L602	L367
Cdr's	III-IV	1	FWS/Ind						
FWS		2							
HGST[2]	V	1	FM 1-140						
Cal/ Ver.	VI	1	Live/Sys	6			128		
Crew	VII	1	Live/Crew	34	8		510	25	
Crew	VIII	1	Live/Crew	34	8	1	510	25	
Team[3,4]	X	1	Live/PLT - Team	10			200	10	
Co.[3,4]	XII	1	Live/Co. - Troop	10			200	15	
FTX		3							27
Total, Airframe				94	16	1	1548	75	81
SQDN X 8 A/C				752	128	8	12,384	600	648
BN X 24 Aircraft				2256	384	24	37,152	1,800	1,944

Notes:
1. ATWESS are resourced in support of MILES/AGES training.
2. Prior to live fire.
3. One engagement will be conducted under MOPP-4 conditions IAW ATM standards.
4. Unit commanders will determine ammunition distribution for advanced table events based on unit training needs.

Table 7-5
Annual Training Strategy and Ammunition, AH-1 Units(TRC C)

EVENT	TABLE	FREQ	HOW/ LEVEL	2.75/ M274	2.75/ M267	TOW	20MM	HOFFMAN	ATWESS[1]
DODIC				H972	H463	PV04	A896	L602	L367
Cdr's	III-IV	1	FWS/IND						
FWS		2							
HGST[2]	V	1	FM 1-140						
Cal/ Ver.	VI	1	Live/Sys	6			128		
Crew	VII	1	Live/Crew	34	8		510	25	
Crew	VIII	1	Live/Crew	34	8	1	510	25	
FTX		3							27
Total, Airframe				74	16		1148	50	81
SQDN X 8 A/C				592	128	8	9,184	400	648
BN X 24 Aircraft				1,776	384	24	27,552	1,200	1,944

Notes:
1. ATWESS are resourced in support of MILES/AGES training.
2. Prior to live fire.

Table 7-6
Annual Training Strategy and Ammunition, Door Gunnery (UH-1, UH-60, CH-47), 7.62mm

EVENT	TABLE	BALL	MIX	BLANK	FREQUENCY TRC A	FREQUENCY TRC C
DODIC		A143	A131	A111		
10 Meter Practice Fire[1]	I	117			1	1
10 Meter Record Fire[1]	II	119			1	1
Transition Practice[1,4]	III		182		1	1
Transition Record Fire[1]	IV		154		1	1
Door Gunnery	V		Dry Fire		1	1
Aircraft Transition	VI		150		1	1
Aircraft Practice	VII		240		1	1
Aircraft Qualification	VIII		240		1	1
PLT/CO FTX				200	1	1
ARTEP				200	1	1
Section/Platoon Training (MILES)	IX			200	1	0
Section/Platoon Training (Live-fire)	X		200		1	0
TOTALS, TRC A		236	1166	600		
TOTAL, TRC C		236	966	400		

Notes:
1. Event found in FM 23-67.
2. Table V-X are found in FM 1-140.
3. Table reflects authorization for one gunner position per aircraft. Total rounds per aircraft double for authorized second gunner position.
4. NBC fire is integrated into transition events (FM 23-67).

Table 7-7
Annual Training Strategy and Ammunition, OH-58D(I) (TRC A)

EVENT	TABLE	FREQ	HOW/LEVEL	2.75 M274	2.75 M267	HELLFIRE/ STINGER[3]	.50 CAL	HOFFMAN	ATWESS[2]
DODIC				H972	H463	PA79/PL90	A557	L602	L367
Cdr's	III-IV	1	LIVE/IND	20	8		320	20	
HGST	V	1	FM 1-140						
Cal/ Ver.	VI	1	Live/Sys	7			40		
Crew	VII	1	Live/Crew	19	7		560	25	
Crew	VIII	1	Live/Crew	19	7		560	25	
Team[1]	X	1	Live/PLT - Team	14		1 HELLFIRE/ 1 STINGER[3]	480	10	
Co.[1]	XII	1	Live/Co. - Troop	14			480	15	
FTX		3							27
Total, Airframe				93	22		2440	95	81
SQDN X 8 Aircraft				744	176		19,520	760	648
BN X 24 Aircraft				2,232	528		58,560	2,280	1,944

Notes:
1. Unit commanders will determine ammunition distribution for advanced table events based on unit training needs.
2. ATWESS are resourced in support of MILES/AGES training.
3. Hellfire/Stinger rounds will not be resourced. When available, stockpile reliability surveillance/stock rotation round will be used.

Table 7-8
Annual Training Strategy and Ammunition, OH-58D(I) (TRC C)

EVENT	TABLE	FREQ	HOW/ LEVEL	2.75 M274	2.75 M267	HELLFIRE/ STINGER[2]	.50 CAL	HOFFMAN	ATWESS[1]
DODIC				H972	H463	PA79/PL90	A557	L602	L367
Cdr's	III-IV	1	LIVE/IND	20	8		320	20	
HGST	V	1	FM 1-140						
Cal/ Ver.	VI	1	Live/Sys	7			40		
Crew	VII	1	Live/Crew	19	7		560	25	
Crew	VIII	1	Live/Crew	19	7	1 HELLFIRE/ 1 STINGER[3]	560	25	
FTX		3							27
Total, Airframe				65	22		1480	70	81
SQDN X 8 A/C				520	176		11,840	560	648
BN X 24 Aircraft				1,560	528		35,520	1,680	1,944

Notes:
1. ATWESS are resourced in support of MILES/AGES training.
2. Hellfire/Stinger rounds will not be resourced. When available, stockpile reliability surveillance/stock rotation round will be used.